

Characteristics utilization of public space in Padang City based on good public space index

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Abstract. Padang is a metropolitan city which has 40 units of open space like plansum park, playground, and sports park with 10,88 hectar of total area. These open spaces are publics', but not all of them are able to use as active public open spaces it caused by some of the parks are dormant parks beacuse they only for planted ground not for public activites. This study conducted to assess the quality of public space that exist in Padang; Imam Bonjol park (representing of city open space (go-green)), H. Agus Salim sport center (representing of sports park) and Pantai Muaro Padang area (representing of recreation/tourism). The method of this research conducted in several stages, first was the identification toward space's function (Carmona,2008) and assess the space utilization index based approach to public space index (Metha,2007). The spaced quality is measured based on variable in Good Public Space Index which is the intensity of use, social activities, duration of activities, variation and pattern of use. The urgency of this research related to the effort to evaluate the policy of space arrangement and space control through the assessment of the use of existed spaces, until it can be references to Padang goverment in improving and increasing the quality of space thorough development of spaces that have high quality. The assesment of quality of public open spaces in Padang conducted by assessed five space quality variables, result of analysis, utilization of public space was 0.69. based on the result it can be concluded the quality of public space in some parks in Padang has moderate index quality. This is caused by the time differentiation of the society, there is no interaction among society, and short time duration of the society in visiting the public space.

1. Introduction

Most of public space in padang are dormant, so they become obstacle to the society to do activites in open spaces. Generally, there are 3 public space that used by the society like Iman Bonjol Park, Agus Salim sport center, and Muaro Padang for recreation area which located in downtown include sub-district of west Padang and east Padang.

Open space of Imam Bonjol is in Padang downtown in east Padang sub-district and become an icon of Padang. Based on physycal condition Imam Bonjol space include to soft space which is dominated by plats, grasses then the available facilities such as football field, playground, and parking lot.

Agus Salim sports center located in west Padang sub-district. This is called hard space which one of open space but does not based on go-green areas, the facilities are field, swimming pool, plaza, parking lot, and another sports facilities.



Another area is used by the society as hangout and place to do activities is in Muaro Padang space located in Samudra street (west Padang sub-district). This is recreation/tourism areas in along side of Padang Beach (4 km) then the available facilities like parks in the edge of the beach and food streets.

The purpose of this research was to measuring the quality of public space for the people, because many of it's made by government is not used frequently. It's used for passive activity. How to attract the use of public space by increasing the facility diversity so that there is diverse activities in the public space from the different age or different class.

This research used samples of 3 main open spaces in Padang; Imam Bonjol Park (representing open space (go-green) in Padan), Agus Salim sports center (representing sports park) and Pantai Muaro Padang (recreation/tourism).

2. Methodology

Urgency of the related research by evaluating the policy of space arrangement and control through existed spaces and as the references for Padang government in enhancing the space quality through development of quality spaces.

Based on the function of city space it can be divided into several typologies (Carmona, et al: 2008):

- a. Positive space. This is a public space that can be used for positive activities and managed by the government. This is natural, semi natural, public space and open public space.
- b. Negative space. A public space that cannot be used as a public activities because it has no support for society to do activities comfortably and securely and un managed condition. This is movement space, service and abandoned spaces because un managed planned
- c. Ambiguous space. This is used for transition activities of the society like recreation space, dept stores, cafe, religious site, etc.
- d. Private space. This is has a private owner, for instance open private space, backyard, terrace.

The relation with social activities performance in public space, Metha (2007) uses some variables to measure and arrange "Good Public Space Index" as follows:

Good Public Space Index (GPSI) is a method that describes how a public space for the community to use meaningful social activity as well as the characteristics of the outdoor space as an approach (Parlindungan 2013). GPSI variables and measurement method, comprising:

a. Intensity of use (IU)

This variable is explained by the number of people engaged in activities in park, by dividing the average number of people with the greatest number of the average person who looks beyond. With formula:

$$IU = \frac{\text{the average number of people}}{\text{largest number of people}} \quad (1)$$

b. Intensity of social use (ISU)

This variable is explained by the existence of the group in park. The group occurs when there are at least two people involved in the same activity. This variable is measured by dividing the number of people involved in the group of the largest number of people involved in park. With formula:

$$ISU = \frac{\text{the average number of people in the group}}{\text{the highest number}} \quad (2)$$

c. *People's duration of stay (PDS),*

This variable is explained by the duration of the people to carry out activities in park. This variable is measured by dividing the average time used with the longest time used the space. With formula:

$$PDS = \frac{\text{Average time}}{\text{the longest time}} \quad (3)$$

d. *Temporal diversity of use,*

This variable is measured based on the distribution of activity that occurs in a period of observation. This variable was measured by using the method of Simpson's Diversity Index. Data from this assessment is the number of diversity of activities available at each observation period (morning, noon, evening and night).

e. *Variety of use,*

This variable is measured from the variety of activities. This variable was measured by using the method of Simpson's Diversity Index. Data from this assessment is the number of diversity activities.

f. *Diversity of users,*

This variable is measured from the diversity of the characteristics of the user. This variable was measured by using the method of Simpson's Diversity Index. Data from the assessment is the number of diversity characteristics of the user.

$$\begin{aligned} \text{Simpson's Diversity Index Formula} &= 1 - D \\ D &= \Sigma n(n-1)/N(N-1) \end{aligned} \quad (4)$$

3. Results and Discussion

The public space Imam Bonjol park is a city park with mixed activities such as recreation, sports and another social activities. With wide range of public 2.5 Ha and supportive location in Padang downtown make it as the highest visited public space to do activities, like to do sports or only recreation.

Imam Bonjol park is dominated by green field that use for sport activities such as football, ceremonies, for pray (Eid Fitri and Eid Adha). The existence of the building inside the park is hall as a tribune for the spectators or dais while ceremonies (60 m2), other supportive facilities are lane for walkers, chairs, playground etc. Some facilities are in less manageable for instance broken chairs that made of stone, damage the garden lamp.

The activities around Imam Bonjol park like office, trade and service center. Another activity that can be found is the sellers who sell in the sidewalk, it can be seen on Prof. A Yamin street in front of Policy Deputy Padang.

Pantai Muaro Padang area is in the west of Padang downtown (Pasar Raya), as long as Samudra street in west Padang sub-district. It started from Hayam Wuruk and Muara street (south) until Ir. Juanda street (west and east). It covered beach area along for 4 km.

The activities in Pantai Muaro Padang are dominated by recreation/ tourism activities with some spots of tourism center, service (restaurant and hotel), trading (food stall, store), housing and public facility like education and religious facilities. The area which is dominated by recreation spots, Pantai Muaro Padang is always become the highest visited by the local or international tourist. The available tourism activities like tour of nature, beautiful scenery, culinary (traditional foods), sports (swimming, surfing) and family recreation. Tourism facilities that available in Pantai Muaro Padang like IORA park, Merpati Perjuangan column, Muaro Lasak park, Lapau Panjang Cimpago, and Rumah Makan Ikan Bakar that available in east part of Samudra street. The public facilities in Pantai Muaro Padang are parking lot, chairs, sidewalk, sidewalk lamp, trash can, worship place, toilet, food stalls, sports equipment renting (bike).

The street line that accross Pantai Muaro Padang Area is colector prime street, 2 lane and 4 column, the wide rage for each of them is 7 untill 10 m and separated by medians of road with broad is 1.5 untill 3 m. The wide of sidewalk (not all sidewalks are able to passed bt walkers) is 2 untill 3 m.

The existence of west side building are dominated by housing, trading, and general public service. Border of the buildings in this area start from 0 until 12 m. The building which doest has border is in flamboyan Baru, Rimbo Kaluang village, around Pasar Pagi and some in Olo village, meanwhile the buildings with GSB untill 12 m is in Belakang Tangsi village and Purus.

The Agus Salim sport center is in Flamboyan , west Padang sub district 5.5 hectar wide range. The Agus Salim sports center is most visited by the society because there are a lot of sports facilities for instance football stadium, teratai swimming pool, basket ball field (2 units), volley ball field, tennis, parking lot, Pujasera (food stalls park).

Despite of Agus Salim sports center is sport facility, it also become a family recreation, like palyground, music show, circus, exhibition, shopping and many more. The public facilities beside sport facilities are sidewalk, parking lot, playground, sidewalk lamp, and trash can.

Based on identification toward public space in Padang which become the study case in this research, then the typology can be arranged based on variables; wide, characteristics of land surfaces, activities and etc. Based on comparison analysis between form and characteristic of public space which exist in theoretical or law order, so the public space in Padang can be classified based on some variables, as follows:

Table1. Type of Public Space in Padang based Assessment of Multiple Variables

Variable	Public Space Type		
	Imam Bonjol Park	Padang Beach Park	H. Agus Salim Sports Centre
Area Wide (Typology based on area wide)	2.5 hectares (city park)	10 hectares (region park)	5.5 hectares (region park)
Domination of Land Cover (Typology based on pavement)	Grass and plant (soft space)	Asphalt, paving block, sand (hard space)	Asphalt, paving block, grass and plant (hard space)
Activities	Recreation, sport, celebration	Recreation, sport, celebration	Recreation, sport, celebration
Accessibility	Easy to access	Easy to access	limited to a particular facility
Ownership	Public (local government)	Public (local government)	Public (local government)
Form space	Square	Linier/street	Square

The assessment of public space quality in Padang conducted at 3 public spaces, Imam Bonjol Park, Pantai Muaro Padang, and Agus Salim sport center, they are examined by assessed 5 variables of space quality. Observation and measurement in field were conducted in free day (Sunday), it assumed the intensity of visitors were high. The observation performed for 4 times for each public space, from morning untill night time. The data was the average of two times observation.

Rate index of the quality of public spaces in the city of Padang conducted by assessing five (5) variable quality of the space, as described in section research methods. Observations and field measurements performed on a weekend (Sunday), where it is assumed on the day of the intensity of use of public space is higher than the other days. Observations were made for 4 (four) times in each public space, with observation time from morning till night. The data used is the average number of such observations. The following are observations and field measurements that have been done.

Table2. Intensity of the use of space

Observation Time	Number of visitors		
	Imam Bonjol Park	Padang Beach Park	H. Agus Salim Sport Centre
Morning (07.00-09.00 am)	122	237	244
Noon (11.00 am-01.00 pm)	365	108	122
Evening (03.00-05.00 pm)	227	285	98
Night (07.00-09.00 pm)	12	41	9
Total number of visitors	726	671	473
Average number of visitors	181.5	167.75	118.25
Highest number of visitors	365	285	244
IU	0.497	0.589	0.485

Table3. Intensity of social use

Observation Time	Number of visitor's group		
	Imam Bonjol Park	Padang Beach Park	H. Agus Salim Sport Centre
Morning (07.00-09.00 am)	98	215	115
Noon (11.00 am-01.00 pm)	201	87	98
Evening (03.00-05.00 pm)	189	241	86
Night (07.00-09.00 pm)	2	22	4
Total number of visitor's group	490	565	303
Average number of visitor's group	122.5	141.25	75.75
Highest number of visitor's group	201	241	115
ISU	0.609	0.586	0.659

Table4. People's duration of stay

Observation Time	Duration of use (minutes)		
	Imam Bonjol Park	Padang Beach Park	H. Agus Salim Sport Centre
Morning (07.00-09.00 am)	120	120	120
Noon (11.00 am-01.00 pm)	45	30	60
Evening (03.00-05.00 pm)	90	60	60
Night (07.00-09.00 pm)	60	90	30
Total Durations (minutes)	315	300	270
Average Duration (minutes)	78.75	75	67.5
Longest Duration (minutes)	120	120	120
PDS	0.656	0.625	0.563

Table5. Temporal diversity of use

Observation Time	Imam Bonjol Park			Padang Beach Park			H. Agus Salim Sport Centre		
	N	n-1	n(n-1)	N	n-1	n(n-1)	N	n-1	n(n-1)
Morning (07.00-09.00 am)	7	6	42	7	6	42	7	6	42
Noon (11.00 am-01.00 pm)	3	2	6	2	1	2	6	5	30
Evening (03.00-05.00 pm)	7	6	42	5	4	20	7	6	42
Night (07.00-09.00 pm)	2	1	2	2	1	2	3	2	6
Total (N)	19	15	92	16	12	66	23	19	120
N-1	18	14	91	15	11	65	22	18	119
N(N-1)	342			240			506		
D		0.266			0.271			0.235	
Simpson Index		0.734			0.729			0.765	

Table 6. Variety of use

Activity	Imam Bonjol Park			Padang Beach Park			H. Agus Salim Sport Centre		
	N	n-1	n(n-1)	N	n-1	n(n-1)	N	n-1	n(n-1)
Jogging	20	19	380	40	39	1560	20	19	380
Walking	20	19	380	20	19	380	20	19	380
Bicycle	5	4	20	10	9	90	5	4	20
Sitting	5	4	20	5	4	20	5	4	20
Eating	5	4	20	5	4	20	5	4	20
Play in groups	20	19	380	10	9	90	15	14	210
Sport in groups	25	24	600	10	9	90	30	29	870
Total (N)	100	93	1800	100	93	2250	100	93	1900
N-1	99	92	1799	99	92	2249	99	92	1899
N(N-1)	9900			9900			9900		
D		0.182			0.227			0.192	
Simpson Index		0.818			0.773			0.808	

Table 7. Diversity of User

Type Of User	Imam Bonjol Park			Padang Beach Park			H. Agus Salim Sport Centre		
	n	n-1	n(n-1)	n	n-1	n(n-1)	n	n-1	n(n-1)
Male									
Toddler (0-5)	0	-1	0	0	-1	0	5	4	20
Children (6-12)	5	4	20	5	4	20	5	4	20
Juvenile (13-18)	15	14	210	10	9	90	5	4	20
Adult (19-45)	20	19	380	10	9	90	20	19	380
Elderly (>45)	10	9	90	20	19	380	10	9	90
Female									
Toddler (0-5)	0	-1	0	0	-1	0	5	4	20
Children (6-12)	5	4	20	5	4	20	5	4	20

Type Of User	Imam Bonjol Park			Padang Beach Park			H. Agus Salim Sport Centre		
	n	n-1	n(n-1)	n	n-1	n(n-1)	n	n-1	n(n-1)
Juvenile (13-18)	20	19	380	15	14	210	10	9	90
Adult (19-45)	15	14	210	10	9	90	25	24	600
Elderly (>45)	10	9	90	25	24	600	10	9	90
Total (N)	100	90	1400	100	90	1500	100	90	1350
N-1	99	89	1399	99	89	1499	99	89	1349
N(N-1)	9900			9900			9900		
D		0.141			0.151			0.136	
Simpson Index		0.859			0.849			0.864	

Table8. Conclusion of Public Space Index Padang City

Variable	Index of Variable		
	Imam Bonjol Park	Muaro Padang Beach	H. Agus Salim Sports Centre
Intensity of Use (IU)	0.497	0.589	0.485
Intensity of Social Use (ISU)	0.609	0.586	0.659
People's Duration of Stay (PDS)	0.656	0.625	0.563
Temporal Diversity of Use (TDU)	0.734	0.729	0.765
Variety of Use (VU)	0.818	0.773	0.808
Diversity of User (DU)	0.859	0.849	0.864
TOTAL GPSI	4.174	4.150	4.143
Average GPSI	0.696	0.692	0.690
Category	Moderate	Moderate	Moderate

4. Conclusions

Based on the research that has been examined, the quality of public spaces in case of Padang have an average index of 0.69 means included in category Moderate quality. The quality of public space that has not reached the Good index, allegedly due to lack of diversity in user activity time, less formation of social interaction between users, and the duration of the average time visitors who are still short in exploiting public space. All public spaces in this case, did not show a significant difference in quality, where the value of the index on each is not far adrift and still be in the same range.

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